

# **TEST REPORT**

**Report Number:** 15496277-E30V3

**Applicant :** APPLE, INC  
1 APPLE PARK WAY  
CUPERTINO, CA, 95014

**Model :** A3258

**Brand :** APPLE

**FCC ID :** BCG-E8947A

**EUT Description :** SMARTPHONE

**Test Standard(s) :** FCC 47 CFR PART 2, PART 27

**Date Of Issue:**  
2025-08-28

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Revision History

| Rev. | Issue Date | Revisions                | Revised By       |
|------|------------|--------------------------|------------------|
| V1   | 2025-08-01 | Initial Review           | --               |
| V2   | 2025-08-15 | Updated Section 6 and 10 | Eric Ting        |
| V3   | 2025-08-28 | Updated Section 9.2      | Mengistu Mekuria |

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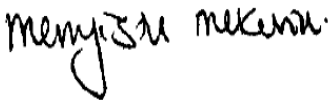
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## 1. ATTESTATION OF TEST RESULTS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                          |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Applicant Name and Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | APPLE, INC<br>1 APPLE PARK WAY<br>CUPERTINO, CA, 95014                                                                                                   |                                                                                       |
| Model                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A3258                                                                                                                                                    |                                                                                       |
| Brand                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | APPLE                                                                                                                                                    |                                                                                       |
| FCC ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BCG-E8947A                                                                                                                                               |                                                                                       |
| EUT Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SMARTPHONE                                                                                                                                               |                                                                                       |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | RADIATED: DQMWH1905G, GQQ7TY7JLY, J46VHKX6H, DMXG3RKJYV<br>CONDUCTED: J6HHCW0001W0000WEZ, J6HHG2000FA0000WEZ,<br>J6HHH50000V0000WEZ, J6HHCZ0000FP0000WEZ |                                                                                       |
| Sample Receipt Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2024-11-12                                                                                                                                               |                                                                                       |
| Date Tested                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2024-11-20 to 2025-07-15                                                                                                                                 |                                                                                       |
| Applicable Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FCC 47 CFR PART 2, PART 27                                                                                                                               |                                                                                       |
| Test Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | COMPLIES                                                                                                                                                 |                                                                                       |
| <p>UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.</p> <p>The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.</p> <p>This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document.</p> |                                                                                                                                                          |                                                                                       |
| Approved & Released By:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Reviewed By:                                                                                                                                             | Prepared By:                                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                       |  |
| Mengistu Mekuria<br>Staff Laboratory Engineer<br>UL Verification Services Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Binod Sitaula<br>Laboratory Engineer Associate<br>UL Verification Services Inc.                                                                          | Tewodros Woldemichael<br>Laboratory Engineer<br>UL Verification Services Inc.         |

## 2. SUMMARY OF TEST RESULTS

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for correctly integrating customer-provided data with measurements performed by UL Verification Services Inc.

Below is a list of the data provided by the customer:

1. Antenna gain (see section 6.4)

| Requirement Description              | Requirement Clause Number (FCC) | Result   | Remarks |
|--------------------------------------|---------------------------------|----------|---------|
| Equivalent Isotropic Radiated Power  | 27.50 (d) (4)                   | Complies |         |
| Occupied Bandwidth                   | 2.1049                          | Complies |         |
| Band Edge and Emission Mask          | 2.1051, 27.53 (h)               | Complies |         |
| Out of Band Emissions                | 2.1051, 27.53 (h)               | Complies |         |
| Frequency Stability                  | 2.1055, 27.54                   | Complies |         |
| Peak-to-Average Ratio                | 27.50 (d) (5)                   | Complies |         |
| Field Strength of Spurious Radiation | 2.1053, 27.53 (h)               | Complies |         |

### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the following.

- ANSI C63.26:2015
- ANSI/TIA-603-E (2016)
- FCC 47 CFR Part 2, Part 27
- [FCC KDB 971168 D01](#): Power Meas License Digital Systems
- [FCC KDB 971168 D02](#): Misc Rev Approv License Devices
- [FCC KDB 412172 D01](#): Determining ERP and EIRP

### 4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

|                                     | Address                                                  | ISED<br>CABID | ISED<br>Company<br>Number | FCC<br>Registration |
|-------------------------------------|----------------------------------------------------------|---------------|---------------------------|---------------------|
| <input type="checkbox"/>            | Building 1: 47173 Benicia Street, Fremont, CA 94538, USA | US0104        | 2324A                     | 550739              |
| <input checked="" type="checkbox"/> | Building 2: 47266 Benicia Street, Fremont, CA 94538, USA |               |                           |                     |
| <input checked="" type="checkbox"/> | Building 3: 843 Auburn Court, Fremont, CA 94538, USA     |               |                           |                     |
| <input type="checkbox"/>            | Building 4: 47658 Kato Rd, Fremont, CA 94538, USA        |               |                           |                     |
| <input checked="" type="checkbox"/> | Building 5: 47670 Kato Rd, Fremont, CA 94538, USA        |               |                           |                     |

## 5. DECISION RULES AND MEASUREMENT UNCERTAINTY

### 5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

### 5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 5.1. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                                            | U <sub>Lab</sub>               |
|------------------------------------------------------|--------------------------------|
| Conducted Antenna Port Emission Measurement          | 1.940 dB                       |
| Power Spectral Density                               | 2.466 dB                       |
| Time Domain Measurements Using SA                    | 3.39 %                         |
| RF Power Measurement Direct Method Using Power Meter | 0.450 dB Ave.<br>1.300 dB Peak |
| Radio Frequency (Spectrum Analyzer)                  | 141.16 Hz                      |
| Occupied Bandwidth                                   | 1.22%                          |
| Worst Case Conducted Disturbance, 9KHz to 0.15 MHz   | 3.78 dB                        |
| Worst Case Conducted Disturbance, 0.15 to 30 MHz     | 3.40 dB                        |
| Worst Case Radiated Disturbance, 9KHz to 30 MHz      | 2.87 dB                        |
| Worst Case Radiated Disturbance, 30 to 1000 MHz      | 6.01 dB                        |
| Worst Case Radiated Disturbance, 1000 to 18000 MHz   | 4.73 dB                        |
| Worst Case Radiated Disturbance, 18000 to 26000 MHz  | 4.51 dB                        |
| Worst Case Radiated Disturbance, 26000 to 40000 MHz  | 5.29 dB                        |

Uncertainty figures are valid to a confidence level of 95%.

### 5.2. SAMPLE CALCULATION

#### RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)  
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 6. EQUIPMENT UNDER TEST

### 6.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5G NR1, 5G NR2, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

### 6.2. MAXIMUM OUTPUT POWER

#### EIRP/ERP TEST PROCEDURE

ANSI C63.26:2015  
KDB 971168 D01 Section 5.6

$$\text{ERP/EIRP} = \text{PMeas} + \text{GT} - \text{LC}$$

where: ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);

PMeas = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations average conducted and ERP/EIRP output powers as follows:

#### 5G NR n70

| Part 27                   |            |                     |                       |                         |                    |                  |              |              |                     |
|---------------------------|------------|---------------------|-----------------------|-------------------------|--------------------|------------------|--------------|--------------|---------------------|
| EIRP Limit (W)            |            | 1.00                |                       |                         |                    |                  |              |              |                     |
| Antenna Gain (dBi) Ant(4) |            | -1.20               |                       |                         |                    |                  |              |              |                     |
| Bandwidth (MHz)           | Modulation | Low Frequency (MHz) | Upper Frequency (MHz) | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Average (W) | 99% BW (MHz) | 99% BW (kHz) | Emission Designator |
| 5.0                       | BPSK       | 1697.5              | 1707.5                | 25.70                   | 24.50              | 0.282            | 4.508        | 4508         | 4M51G7W             |
|                           | QPSK       |                     |                       | 25.70                   | 24.50              | 0.282            | 4.505        | 4505         | 4M51G7W             |
|                           | 16QAM      |                     |                       | 24.63                   | 23.43              | 0.220            | 4.513        | 4513         | 4M51D7W             |
| 10.0                      | BPSK       | 1700.0              | 1705.0                | 25.70                   | 24.50              | 0.282            | 8.983        | 8983         | 8M98G7W             |
|                           | QPSK       |                     |                       | 25.70                   | 24.50              | 0.282            | 8.971        | 8971         | 8M97G7W             |
|                           | 16QAM      |                     |                       | 24.46                   | 23.26              | 0.212            | 8.962        | 8962         | 8M96D7W             |
| 15.0                      | BPSK       | 1702.5              | 1702.5                | 25.70                   | 24.50              | 0.282            | 13.460       | 13460        | 13M5G7W             |
|                           | QPSK       |                     |                       | 25.70                   | 24.50              | 0.282            | 13.439       | 13439        | 13M4G7W             |
|                           | 16QAM      |                     |                       | 24.51                   | 23.31              | 0.214            | 13.518       | 13518        | 13M5D7W             |

### 6.3. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version 0.8.0.0.

### 6.4. MAXIMUM ANTENNA GAIN AND MAXIMUM ALLOWED OUTPUT POWER

The IFA antenna(s) gain/ allowed output power, as provided by the manufacturer' are as follows:

| Bands     | Frequency Range (MHz) | Antenna | Gain (dBi) | Max Allowed Conducted Output Power (dBm) | ERP/EIRP (dBm) |
|-----------|-----------------------|---------|------------|------------------------------------------|----------------|
| 5G NR n70 | 1695 - 1710           | ANT1    | -2.10      | 25.70                                    | 23.60          |
|           |                       | ANT2    | -3.00      | 23.40                                    | 20.40          |
|           |                       | ANT3    | -1.90      | 25.70                                    | 23.80          |
|           |                       | ANT4    | -1.20      | 25.70                                    | 24.50          |

## 6.5. WORST-CASE CONFIGURATION AND MODE

This report covers the following technologies:

- 5G NR n70

For 5G NRs, conducted spurious emission tests were conducted on wider bandwidth with inner 1RB since this is the worst bandwidth and the highest output power.

BPSK modulation applied only for 5G NR frequencies and has the same tune up power as QPSK modulations.

The DFT-s-OFDM and CP-OFDM waveforms were investigated, and DFT-s-OFDM was found to be the worst case.

The worst-case scenario for all measurements is based on an engineering evaluation made on different modulations. Then, QPSK and BPSK were observed as the worst mode to LTE bands and 5G NR bands respectively and set for all conducted and radiated. Output power measurements were measured on BPSK, QPSK, 16QAM, 64QAM, and 256QAM modulations. For testing purposes emissions on section 9 were measured while QPSK/BPSK was set at or above target power for all bands. Conducted tests were performed on the worst-case antenna port because it has the highest conducted power. The worst-case antenna port is shown in the table below.

| 5G NR Bands | Worst case Antenna Port |
|-------------|-------------------------|
| 5G NR 70    | Ant 1                   |

The EUT was investigated in three orthogonal orientations X/Y/Z on all available antennas to determine the worst-case orientation. The following table exhibits the worst-case orientation. The full tests of the EUT have made upon the orientations shown in the table below.

| Frequency Range | ANT1 | ANT2 | ANT3 | ANT4 |
|-----------------|------|------|------|------|
| 1695 – 1710 MHz | X    | X    | Y    | X    |

Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. There were no emissions found with less than 20dB of margin from 9kHz to 30MHz, 30MHz-1GHz.

For simultaneous transmission of multiple channels in the 2.4GHz/5GHz WLAN, UWB, and Cellular bands, tests were conducted for various configurations having the highest power, least separation in frequencies and widest operation bandwidths. No noticeable new emission was found.

## **6.6. DESCRIPTION OF TEST SETUP**

Refer to Appendix A for description of test setup.

## 7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST                                |                           |                   |                                                          |            |
|----------------------------------------------------|---------------------------|-------------------|----------------------------------------------------------|------------|
| Description                                        | Manufacturer              | Model             | Asset                                                    | Cal Due    |
| Wideband Communication Test Set, Call Box          | R&S GmbH & Co.            | CMW500            | 85723                                                    | 2026-02-28 |
| Wideband Communication Test Set, Call Box          | R&S GmbH & Co.            | CMW500            | 230297                                                   | 2026-02-28 |
| EMI TEST RECEIVER                                  | Rohde & Schwarz           | ESW44             | 169936                                                   | 2026-02-28 |
| Antenna, Horn 1-18GHz                              | ETS Lindgren              | 3117              | 200897                                                   | 2026-04-30 |
| RF Filter Box, 1-18GHz, 12 Port                    | UL-FR1                    | Frankenstein      | 217255                                                   | 2026-01-31 |
| EMI TEST RECEIVER                                  | Rohde & Schwarz           | ESW44             | 223460                                                   | 2026-02-28 |
| RF Filter Box, 1-18GHz, 17 Port                    | UL-FR1                    | RATS 2            | 236726                                                   | 2025-10-31 |
| Antenna, Horn 1-18GHz                              | ETS Lindgren              | 3117              | 80403                                                    | 2026-08-31 |
| Antenna, Broadband Hybrid, 30MHz to 3GHz           | Sunol Sciences Corp.      | JB3               | 171863                                                   | 2026-11-30 |
| Amplifier 9 KHz - 1 GHz                            | SONOMA INSTRUMENT         | 310N              | 224490                                                   | 2026-05-06 |
| Antenna, Passive Loop 30Hz - 1MHz                  | ELECTRO-METRICS           | EM-6871           | 170013                                                   | 2025-07-31 |
| Antenna, Passive Loop 100KHz - 30MHz               | ELECTRO-METRICS           | EM-6872           | 170015                                                   | 2025-07-31 |
| PXA Signal Analyzer                                | Keysight Technologies Inc | N9030B            | 262735                                                   | 2026-03-30 |
| PXA Signal Analyzer                                | Keysight Technologies Inc | N9030B            | 231912                                                   | 2026-04-30 |
| PXA Signal Analyzer                                | Keysight Technologies Inc | N9030B            | 259079                                                   | 2026-02-28 |
| PXA Signal Analyzer                                | Agilent Technologies Inc  | N9030A            | 87738                                                    | 2026-01-16 |
| UXM 5G Wireless Test Platform                      | Keysight Technologies Inc | E7515B            | MY59020604                                               | 2026-02-26 |
| Wideband Communication Test Set, Call Box          | Rohde & Schwarz           | CMW500            | 230298                                                   | 2026-02-28 |
| Wideband Communication Test Set, Call Box          | Rohde & Schwarz           | CMW500            | 222793                                                   | 2026-02-28 |
| Conducted Switch Box                               | N/A                       | CSB               | 227264                                                   | 2026-03-31 |
| Conducted Switch Box                               | N/A                       | CSB               | 262286                                                   | 2026-04-30 |
| Conducted Switch Box                               | N/A                       | CSB               | 262288                                                   | 2026-04-30 |
| Conducted Switch Box                               | N/A                       | CSB               | 263817                                                   | 2026-05-31 |
| Filter, BRF 3400-3800MHz, 18GHz max                | Micro-Tronics             | BRM50711          | 217364                                                   | 2025-09-30 |
| Filter, BRF 2305-2315                              | Micro-Tronics             | BRC20553          | 224186                                                   | 2026-06-29 |
| Power Sensor, P - series, 50MHz to 18GHz, Wideband | Keysight Technologies Inc | N1921A            | 257704                                                   | 2026-03-31 |
| Chamber, Environmental                             | Cincinnati Sub Zero       | ZPHS-8-3.5-SCT/WC | 89097                                                    | 2025-10-31 |
| Chamber, Environmental                             | Cincinnati Sub Zero       | ZPHS-8-3.5-SCT/WC | 82472                                                    | 2025-08-31 |
| UL AUTOMATION SOFTWARE                             |                           |                   |                                                          |            |
| Conducted Software                                 | UL                        | CLT               | Ver.2023.11.21.0 & .2024.3.20.0 & 2022.7.6.0 & 2023.6.21 |            |
| Conducted Software                                 | UL                        | Power Measurement | Ver.2023.8.14 & 2022.4.29 & 2023.6.8                     |            |
| Conducted Software                                 | UL                        | Antenna Port      | Ver.2022.8.16& 2021.5.13                                 |            |
| Conducted Software                                 | UL                        | Station Tool      | Ver. 5.0 & 5.3 & 6.0 & 6.1                               |            |
| Radiated Software                                  | UL                        | UL EMC            | Ver 9.5, May 1, 2023                                     |            |

## 8. RF OUTPUT POWER VERIFICATION

### CONDUCTED OUTPUT POWER MEASUREMENT PROCEDURE

All bands conducted average power is obtained from the base station simulator.

The following tests were conducted according to the test requirements outlined in ANSI C63.26 Section 5.2.

### RESULTS

EUT has different power levels for head use configuration and body use configuration. All measurements are made with the device operating at the highest average conducted output powers.

## 8.1. 5G NR n70

|                   |       |            |            |
|-------------------|-------|------------|------------|
| Test Engineer ID: | 28774 | Test Date: | 2024-12-10 |
|-------------------|-------|------------|------------|

### OUTPUT POWER FOR 5G NR n70 (5.0 MHz)

| Bandwidth (MHz) | Modulation | RB Allocation | RB Offset | Conducted Average (dBm) |        |        |        |        |        |        |        |        |        |        |        |
|-----------------|------------|---------------|-----------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                 |            |               |           | ANT 1                   |        |        | ANT 2  |        |        | ANT 3  |        |        | ANT 4  |        |        |
|                 |            |               |           | 339500                  | 340500 | 341500 | 339500 | 340500 | 341500 | 339500 | 340500 | 341500 | 339500 | 340500 | 341500 |
| 5.0             | BPSK       | 1             | 0         | 1697.5                  | 1702.5 | 1707.5 | 1697.5 | 1702.5 | 1707.5 | 1697.5 | 1702.5 | 1707.5 | 1697.5 | 1702.5 | 1707.5 |
|                 |            | 1             | 0         | 25.03                   | 25.08  | 25.08  | 22.80  | 22.87  | 22.62  | 24.91  | 24.86  | 25.05  | 25.04  | 24.88  | 24.91  |
|                 |            | 1             | 1         | 25.65                   | 25.52  | 25.51  | 23.35  | 23.11  | 23.19  | 25.43  | 25.34  | 25.52  | 25.70  | 25.38  | 25.13  |
|                 |            | 1             | 23        | 25.41                   | 25.50  | 25.70  | 23.25  | 23.11  | 23.39  | 25.41  | 25.48  | 25.70  | 25.43  | 25.14  | 24.70  |
|                 |            | 1             | 24        | 24.95                   | 25.19  | 25.07  | 22.90  | 22.79  | 22.62  | 24.99  | 25.07  | 24.94  | 24.99  | 24.65  | 24.49  |
|                 |            | 12            | 6         | 25.70                   | 25.58  | 25.64  | 23.32  | 23.14  | 23.40  | 25.47  | 25.49  | 25.65  | 25.63  | 25.37  | 25.02  |
|                 | QPSK       | 25            | 0         | 24.91                   | 25.08  | 24.92  | 22.70  | 22.80  | 22.78  | 24.87  | 24.93  | 25.12  | 24.92  | 24.73  | 24.62  |
|                 |            | 1             | 0         | 24.64                   | 24.54  | 24.45  | 22.33  | 22.37  | 22.25  | 24.40  | 24.42  | 24.55  | 24.60  | 24.50  | 24.52  |
|                 |            | 1             | 1         | 25.70                   | 25.47  | 25.40  | 23.40  | 23.07  | 23.20  | 25.28  | 25.32  | 25.49  | 25.70  | 25.52  | 25.22  |
|                 |            | 1             | 23        | 25.50                   | 25.44  | 25.60  | 23.24  | 23.13  | 23.40  | 25.34  | 25.46  | 25.70  | 25.58  | 25.26  | 24.82  |
|                 |            | 1             | 24        | 24.42                   | 24.62  | 24.59  | 22.16  | 22.37  | 22.23  | 24.41  | 24.56  | 24.64  | 24.55  | 24.24  | 24.04  |
|                 |            | 12            | 6         | 25.66                   | 25.01  | 24.97  | 23.36  | 23.19  | 23.25  | 25.37  | 24.98  | 25.33  | 25.67  | 25.46  | 25.05  |
|                 | 16QAM      | 25            | 0         | 24.53                   | 24.10  | 23.94  | 22.27  | 22.40  | 22.21  | 24.35  | 23.96  | 24.36  | 24.57  | 24.38  | 24.27  |
|                 |            | 1             | 0         | 23.56                   | 23.64  | 23.65  | 21.35  | 21.33  | 21.30  | 23.27  | 23.31  | 23.49  | 23.61  | 23.44  | 23.01  |
|                 |            | 1             | 1         | 24.46                   | 24.61  | 24.70  | 22.21  | 22.40  | 22.40  | 24.19  | 24.35  | 24.58  | 24.63  | 24.44  | 24.06  |
|                 |            | 1             | 23        | 24.68                   | 24.56  | 24.53  | 22.27  | 22.31  | 22.31  | 24.38  | 24.42  | 24.70  | 24.50  | 24.23  | 23.91  |
|                 |            | 1             | 24        | 23.69                   | 23.64  | 23.70  | 21.23  | 21.36  | 21.11  | 23.30  | 23.48  | 23.50  | 23.42  | 23.16  | 22.85  |
|                 |            | 12            | 6         | 24.51                   | 24.11  | 24.08  | 22.29  | 22.36  | 22.33  | 24.27  | 23.95  | 24.44  | 24.51  | 24.26  | 23.88  |
|                 | 64QAM      | 25            | 0         | 23.54                   | 23.22  | 23.10  | 21.18  | 21.32  | 21.34  | 23.23  | 23.01  | 23.42  | 23.52  | 23.24  | 22.87  |
|                 |            | 1             | 0         | 23.05                   | 22.97  | 23.18  | 20.62  | 20.65  | 20.86  | 22.65  | 22.77  | 22.98  | 23.04  | 22.87  | 22.58  |
|                 |            | 1             | 1         | 22.98                   | 23.13  | 23.19  | 20.70  | 20.72  | 20.88  | 22.73  | 22.77  | 23.03  | 23.15  | 22.91  | 22.51  |
|                 |            | 1             | 23        | 23.14                   | 23.12  | 23.01  | 20.85  | 20.89  | 20.76  | 22.83  | 23.03  | 23.18  | 22.96  | 22.65  | 22.45  |
|                 |            | 1             | 24        | 23.14                   | 23.15  | 22.97  | 20.82  | 20.81  | 20.61  | 22.74  | 22.91  | 22.96  | 22.92  | 22.57  | 22.35  |
|                 |            | 12            | 6         | 23.14                   | 22.76  | 22.53  | 20.84  | 20.78  | 20.78  | 22.74  | 22.62  | 22.92  | 23.04  | 22.74  | 22.41  |
|                 | 256QAM     | 25            | 0         | 23.12                   | 22.70  | 22.60  | 20.88  | 20.80  | 20.88  | 22.67  | 22.50  | 22.87  | 23.06  | 22.71  | 22.38  |
|                 |            | 1             | 0         | 21.10                   | 21.19  | 21.09  | 18.67  | 18.84  | 18.75  | 20.63  | 20.69  | 20.96  | 20.95  | 20.78  | 20.43  |
|                 |            | 1             | 1         | 20.95                   | 21.17  | 21.11  | 18.85  | 18.84  | 18.82  | 20.63  | 20.69  | 20.98  | 21.10  | 20.86  | 20.50  |
|                 |            | 1             | 23        | 21.06                   | 21.14  | 21.19  | 18.78  | 18.83  | 18.86  | 20.82  | 20.92  | 21.19  | 20.91  | 20.59  | 20.36  |
|                 |            | 1             | 24        | 21.11                   | 21.17  | 21.16  | 18.64  | 18.80  | 18.90  | 20.74  | 20.90  | 21.18  | 20.91  | 20.53  | 20.36  |
|                 |            | 12            | 6         | 21.10                   | 21.07  | 21.02  | 18.70  | 18.76  | 18.83  | 20.65  | 20.79  | 21.05  | 21.02  | 20.71  | 20.39  |
|                 |            | 25            | 0         | 21.06                   | 21.10  | 21.05  | 18.90  | 18.79  | 18.78  | 20.68  | 20.81  | 21.04  | 21.02  | 20.70  | 20.36  |

### OUTPUT POWER FOR 5G NR n70 (10.0 MHz)

| Bandwidth (MHz) | Modulation | RB Allocation | RB Offset | Conducted Average (dBm) |        |        |        |        |        |        |        |        |        |        |        |
|-----------------|------------|---------------|-----------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                 |            |               |           | ANT 1                   |        |        | ANT 2  |        |        | ANT 3  |        |        | ANT 4  |        |        |
|                 |            |               |           | 340000                  | 340500 | 341000 | 340000 | 340500 | 341000 | 340000 | 340500 | 341000 | 340000 | 340500 | 341000 |
| 10.0            | BPSK       | 1             | 0         | 1700.0                  | 1702.5 | 1705.0 | 1700.0 | 1702.5 | 1705.0 | 1700.0 | 1702.5 | 1705.0 | 1700.0 | 1702.5 | 1705.0 |
|                 |            | 1             | 0         | 25.13                   | 25.09  | 25.11  | 22.64  | 22.71  | 22.87  | 24.83  | 24.79  | 24.82  | 25.09  | 24.99  | 24.84  |
|                 |            | 1             | 1         | 25.70                   | 25.53  | 25.48  | 23.40  | 23.36  | 23.17  | 25.40  | 25.34  | 25.32  | 25.70  | 25.52  | 25.45  |
|                 |            | 1             | 50        | 25.37                   | 25.43  | 25.51  | 23.21  | 23.27  | 23.29  | 25.52  | 25.56  | 25.70  | 25.21  | 25.02  | 24.91  |
|                 |            | 1             | 51        | 25.14                   | 25.09  | 24.98  | 22.81  | 22.69  | 22.60  | 25.00  | 25.09  | 25.18  | 24.62  | 24.41  | 24.28  |
|                 |            | 25            | 12        | 25.50                   | 25.36  | 25.36  | 23.16  | 23.13  | 23.10  | 25.41  | 25.34  | 25.39  | 25.51  | 25.27  | 25.16  |
|                 | QPSK       | 50            | 0         | 25.20                   | 25.11  | 25.15  | 22.67  | 22.65  | 22.87  | 24.92  | 24.91  | 24.97  | 24.91  | 24.79  | 24.61  |
|                 |            | 1             | 0         | 24.68                   | 24.70  | 24.66  | 22.16  | 22.40  | 22.38  | 24.38  | 24.34  | 24.41  | 24.58  | 24.47  | 24.34  |
|                 |            | 1             | 1         | 25.70                   | 25.49  | 25.45  | 23.30  | 23.40  | 23.16  | 25.41  | 25.39  | 25.36  | 25.70  | 25.56  | 25.47  |
|                 |            | 1             | 50        | 25.36                   | 25.37  | 25.52  | 23.20  | 23.31  | 23.33  | 25.59  | 25.62  | 25.52  | 25.26  | 25.06  | 24.94  |
|                 |            | 1             | 51        | 24.64                   | 24.58  | 24.57  | 22.37  | 22.28  | 22.26  | 24.63  | 24.59  | 24.70  | 24.11  | 23.98  | 23.79  |
|                 |            | 25            | 12        | 25.41                   | 24.97  | 24.92  | 23.15  | 23.24  | 23.16  | 25.36  | 25.04  | 25.11  | 25.54  | 25.35  | 25.14  |
|                 | 16QAM      | 50            | 0         | 24.41                   | 24.15  | 24.09  | 22.16  | 22.18  | 22.36  | 24.49  | 24.25  | 24.19  | 24.46  | 24.26  | 24.10  |
|                 |            | 1             | 0         | 23.53                   | 23.55  | 23.59  | 21.15  | 21.38  | 21.22  | 23.44  | 23.31  | 23.23  | 23.60  | 23.41  | 23.23  |
|                 |            | 1             | 1         | 24.43                   | 24.57  | 24.51  | 22.39  | 22.30  | 22.32  | 24.31  | 24.37  | 24.43  | 24.44  | 24.46  | 24.20  |
|                 |            | 1             | 50        | 24.56                   | 24.39  | 24.70  | 22.26  | 22.39  | 22.18  | 24.46  | 24.49  | 24.69  | 24.04  | 23.86  | 23.76  |
|                 |            | 1             | 51        | 23.38                   | 23.39  | 23.70  | 21.09  | 21.15  | 21.39  | 23.48  | 23.59  | 23.68  | 22.99  | 22.86  | 22.65  |
|                 |            | 25            | 12        | 24.60                   | 24.07  | 23.97  | 22.32  | 22.33  | 22.29  | 24.31  | 24.11  | 24.18  | 24.31  | 24.15  | 23.98  |
|                 | 64QAM      | 50            | 0         | 23.59                   | 23.21  | 23.09  | 21.32  | 21.33  | 21.26  | 23.36  | 23.27  | 23.31  | 23.32  | 23.15  | 22.99  |
|                 |            | 1             | 0         | 23.17                   | 23.04  | 23.06  | 20.73  | 20.83  | 20.67  | 22.61  | 22.83  | 22.94  | 23.07  | 22.82  | 22.74  |
|                 |            | 1             | 1         | 23.18                   | 22.96  | 23.11  | 20.68  | 20.89  | 20.76  | 22.74  | 22.80  | 22.87  | 22.99  | 22.94  | 22.80  |
|                 |            | 1             | 50        | 22.94                   | 22.87  | 23.15  | 20.75  | 20.90  | 20.87  | 22.95  | 22.98  | 23.16  | 22.63  | 22.33  | 22.23  |
|                 |            | 1             | 51        | 22.96                   | 23.03  | 23.07  | 20.64  | 20.81  | 20.88  | 22.97  | 23.03  | 23.06  | 22.46  | 22.33  | 22.10  |
|                 |            | 25            | 12        | 23.02                   | 22.68  | 22.50  | 20.85  | 20.77  | 20.64  | 22.77  | 22.65  | 22.67  | 22.81  | 22.61  | 22.48  |
|                 | 256QAM     | 50            | 0         | 23.07                   | 22.81  | 22.57  | 20.80  | 20.83  | 20.72  | 22.82  | 22.68  | 22.80  | 22.79  | 22.61  | 22.52  |
|                 |            | 1             | 0         | 20.91                   | 21.01  | 21.01  | 18.85  | 18.71  | 18.72  | 20.95  | 20.77  | 20.76  | 20.87  | 20.87  | 20.67  |
|                 |            | 1             | 1         | 20.95                   | 21.04  | 21.03  | 18.88  | 18.83  | 18.74  | 20.82  | 20.69  | 20.85  | 20.82  | 20.90  | 20.69  |
|                 |            | 1             | 50        | 20.87                   | 20.98  | 21.03  | 18.81  | 18.76  | 18.87  | 20.90  | 21.00  | 21.16  | 20.44  | 20.41  | 20.32  |
|                 |            | 1             | 51        | 20.83                   | 20.78  | 20.91  | 18.82  | 18.77  | 18.90  | 20.84  | 20.89  | 21.18  | 20.46  | 20.21  | 20.25  |
|                 |            | 25            | 12        | 21.00                   | 20.92  | 20.88  | 18.85  | 18.74  | 18.72  | 20.80  | 20.79  | 20.97  | 20.74  | 20.61  | 20.47  |
|                 |            | 50            | 0         | 21.06                   | 21.00  | 21.00  | 18.86  | 18.77  | 18.72  | 20.79  | 20.76  | 21.01  | 20.73  | 20.61  | 20.45  |

**OUTPUT POWER FOR 5G NR n70 (15.0 MHz)**

| Bandwidth<br>(MHz) | Modulation | RB<br>Allocation | RB<br>Offset | Conducted Average (dBm) |        |     |       |        |     |       |        |     |       |        |     |
|--------------------|------------|------------------|--------------|-------------------------|--------|-----|-------|--------|-----|-------|--------|-----|-------|--------|-----|
|                    |            |                  |              | ANT 1                   |        |     | ANT 2 |        |     | ANT 3 |        |     | ANT 4 |        |     |
|                    |            |                  |              | N/A                     | 340500 | N/A | N/A   | 340500 | N/A | N/A   | 340500 | N/A | N/A   | 340500 | N/A |
| 15.0               | BPSK       | 1                | 0            | 25.20                   |        |     |       | 22.84  |     |       | 24.88  |     |       | 25.08  |     |
|                    |            | 1                | 1            | 25.70                   |        |     |       | 23.40  |     |       | 25.40  |     |       | 25.70  |     |
|                    |            | 1                | 77           | 25.59                   |        |     |       | 23.27  |     |       | 25.70  |     |       | 25.01  |     |
|                    |            | 1                | 78           | 25.10                   |        |     |       | 22.81  |     |       | 25.06  |     |       | 24.39  |     |
|                    |            | 36               | 18           | 25.42                   |        |     |       | 23.07  |     |       | 25.41  |     |       | 25.35  |     |
|                    |            | 75               | 0            | 25.17                   |        |     |       | 22.79  |     |       | 24.92  |     |       | 24.68  |     |
|                    | QPSK       | 1                | 0            | 24.63                   |        |     |       | 22.39  |     |       | 24.44  |     |       | 24.60  |     |
|                    |            | 1                | 1            | 25.70                   |        |     |       | 23.24  |     |       | 25.41  |     |       | 25.70  |     |
|                    |            | 1                | 77           | 25.47                   |        |     |       | 23.34  |     |       | 25.60  |     |       | 24.99  |     |
|                    |            | 1                | 78           | 24.69                   |        |     |       | 22.11  |     |       | 24.66  |     |       | 23.89  |     |
|                    |            | 36               | 18           | 25.22                   |        |     |       | 23.12  |     |       | 25.20  |     |       | 25.41  |     |
|                    |            | 75               | 0            | 24.63                   |        |     |       | 22.36  |     |       | 24.50  |     |       | 24.25  |     |
|                    | 16QAM      | 1                | 0            | 23.62                   |        |     |       | 21.22  |     |       | 23.37  |     |       | 23.49  |     |
|                    |            | 1                | 1            | 24.61                   |        |     |       | 22.33  |     |       | 24.31  |     |       | 24.51  |     |
|                    |            | 1                | 77           | 24.58                   |        |     |       | 22.25  |     |       | 24.60  |     |       | 23.82  |     |
|                    |            | 1                | 78           | 23.70                   |        |     |       | 21.14  |     |       | 23.70  |     |       | 22.75  |     |
|                    |            | 36               | 18           | 24.21                   |        |     |       | 22.19  |     |       | 24.20  |     |       | 24.14  |     |
|                    |            | 75               | 0            | 23.48                   |        |     |       | 21.25  |     |       | 23.40  |     |       | 23.14  |     |
|                    | 64QAM      | 1                | 0            | 22.97                   |        |     |       | 20.67  |     |       | 22.80  |     |       | 23.01  |     |
|                    |            | 1                | 1            | 23.03                   |        |     |       | 20.88  |     |       | 22.78  |     |       | 22.99  |     |
|                    |            | 1                | 77           | 23.04                   |        |     |       | 20.89  |     |       | 23.13  |     |       | 22.32  |     |
|                    |            | 1                | 78           | 23.13                   |        |     |       | 20.84  |     |       | 23.10  |     |       | 22.39  |     |
|                    |            | 36               | 18           | 22.71                   |        |     |       | 20.68  |     |       | 22.84  |     |       | 22.58  |     |
|                    |            | 75               | 0            | 23.00                   |        |     |       | 20.75  |     |       | 22.86  |     |       | 22.62  |     |
|                    | 256QAM     | 1                | 0            | 21.03                   |        |     |       | 18.61  |     |       | 20.90  |     |       | 21.09  |     |
|                    |            | 1                | 1            | 21.18                   |        |     |       | 18.84  |     |       | 20.87  |     |       | 21.01  |     |
|                    |            | 1                | 77           | 21.08                   |        |     |       | 18.88  |     |       | 21.02  |     |       | 20.20  |     |
|                    |            | 1                | 78           | 21.05                   |        |     |       | 18.86  |     |       | 21.12  |     |       | 20.27  |     |
|                    |            | 36               | 18           | 20.90                   |        |     |       | 18.64  |     |       | 20.81  |     |       | 20.57  |     |
|                    |            | 75               | 0            | 20.96                   |        |     |       | 18.82  |     |       | 20.78  |     |       | 20.65  |     |

## 9. CONDUCTED TEST RESULTS

### 9.1. OCCUPIED BANDWIDTH

#### RULE PART(S)

FCC: §2.1049

#### LIMITS

For reporting purposes only.

#### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the middle channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

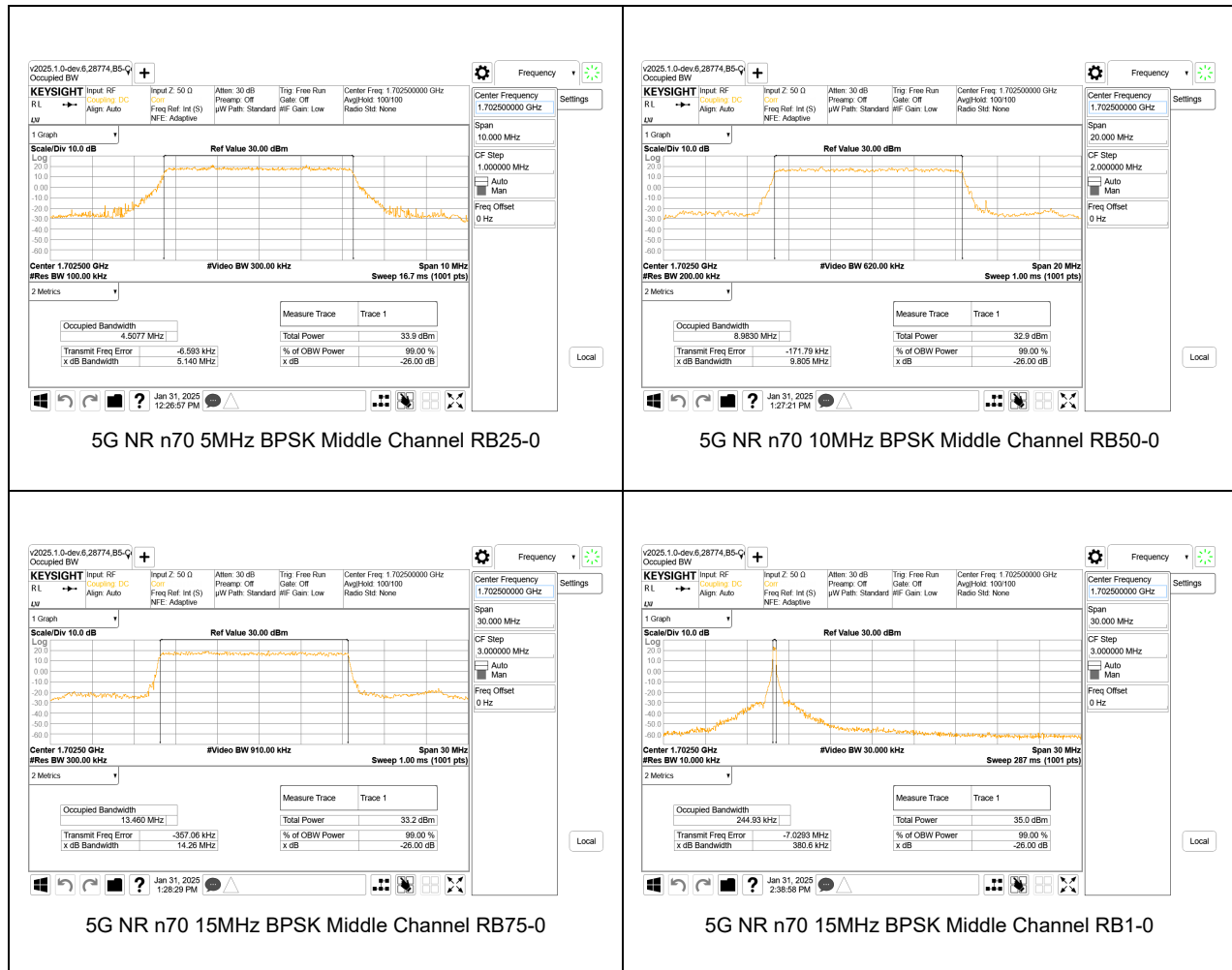
#### RESULTS

There is no limit required and power is the same for low, middle and high channel; therefore, only middle channel was tested.

#### 5G NR n70

| Band      | Mode         | RB Allocation/RB Offset | f(MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|-----------|--------------|-------------------------|--------|--------------|----------------|
| 5G NR n70 | 5MHz, BPSK   | 25/0                    | 1702.5 | 4.508        | 5.14           |
|           | 5MHz, QPSK   |                         |        | 4.505        | 5.27           |
|           | 5MHz, 16QAM  |                         |        | 4.513        | 5.17           |
|           | 10MHz, BPSK  | 50/0                    |        | 8.983        | 9.81           |
|           | 10MHz, QPSK  |                         |        | 8.971        | 9.71           |
|           | 10MHz, 16QAM |                         |        | 8.962        | 9.78           |
|           | 15MHz, BPSK  | 75/0                    |        | 13.460       | 14.26          |
|           | 15MHz, QPSK  |                         |        | 13.439       | 14.50          |
|           | 15MHz, 16QAM |                         |        | 13.518       | 14.53          |
|           | 15MHz, BPSK  | 1/0                     |        | 0.245        | 0.38           |

## 9.1.1. 5G NR n70



## 9.2. EMISSION MASK AND ADJACENT CHANNEL POWER

### LIMITS

FCC: §27.53(h)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

### TEST PROCEDURE

For Spectrum Emission Mask plots, the spectrum analyzer is configured to sweep with a moving integration window, the width of which can be adjusted to different sizes across the sweep. The window width is configured to be greater than or equal to the required reference bandwidth. The center frequencies of the integration window for the different integration windows was set such that the upper and lower edges of the windows are aligned with the transition points in the reference bandwidths. This is achieved by setting the start / stop frequencies of the window with an offset equal to the reference bandwidth / 2 from the transition point.

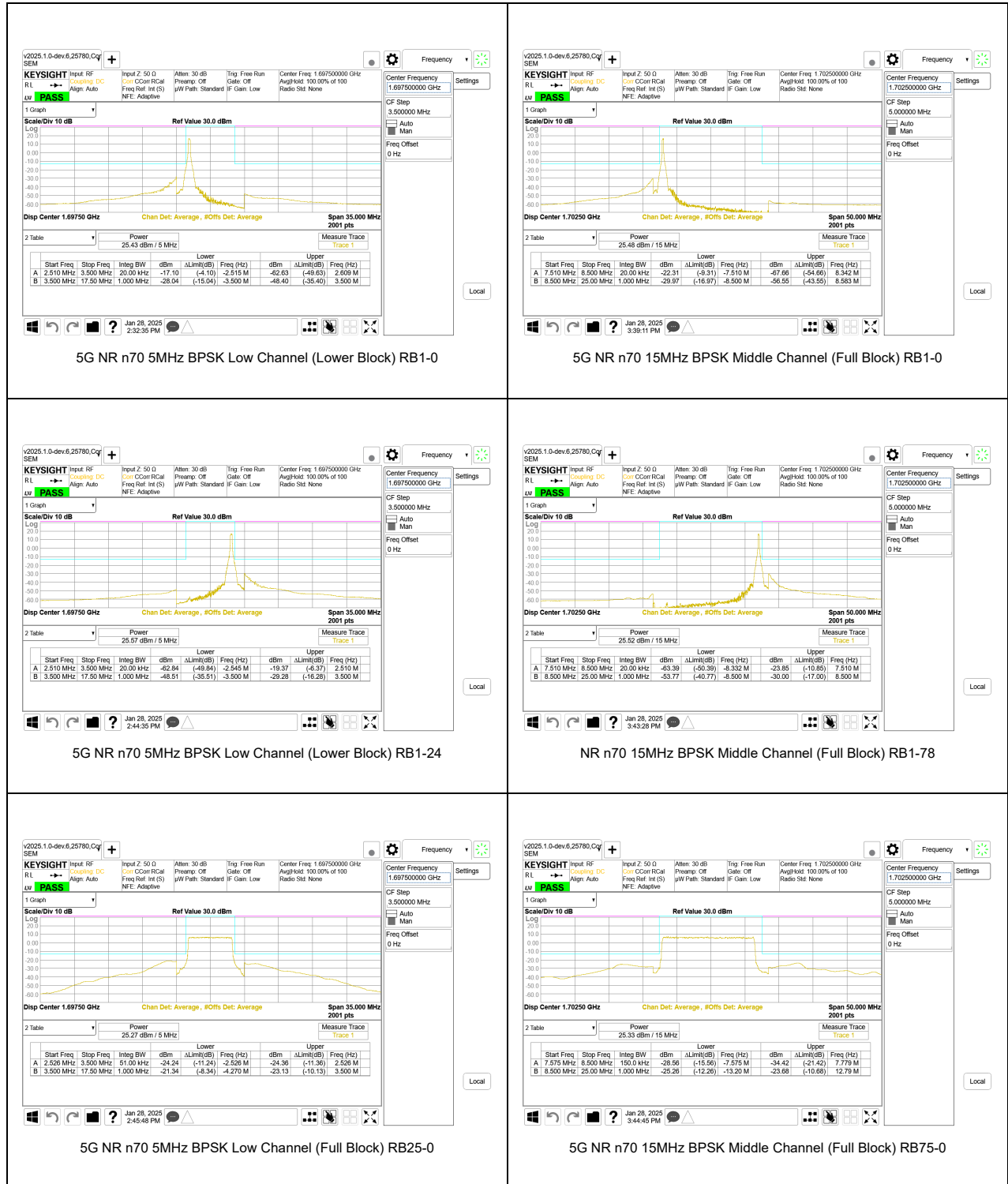
The transmitter output was connected to a base station simulator and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

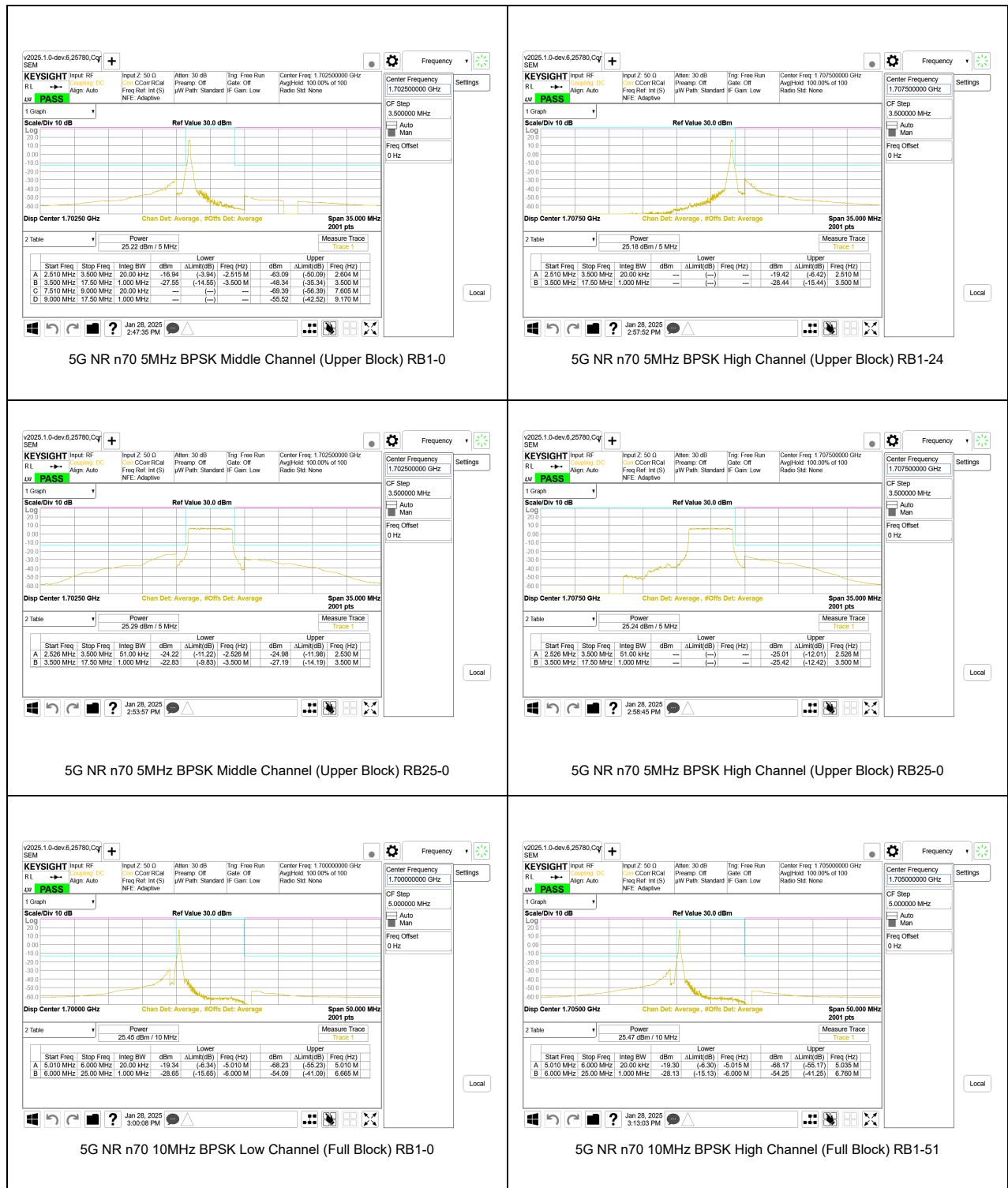
For each band edge measurement:

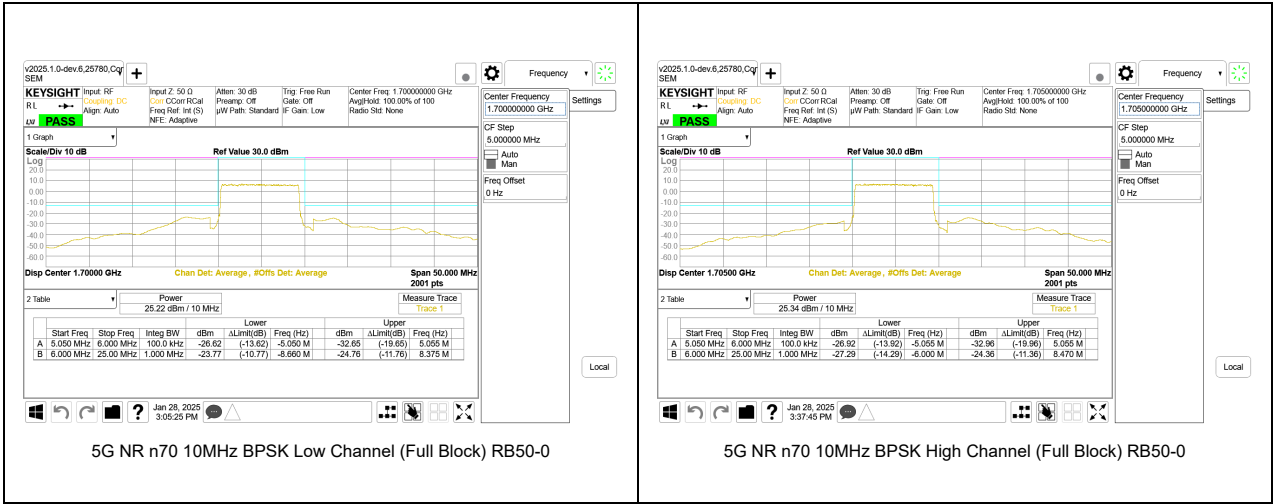
1. Set the spectrum analyzer span to include the block edge frequency.
2. Set a marker to point the corresponding band edge frequency in each test case.
3. Set display line at required limit.
4. Set resolution bandwidth to at least 1% of emission bandwidth.

### RESULTS

## 9.2.1. 5G NR n70







### 9.3. OUT OF BAND EMISSIONS

#### LIMITS

FCC: §27.53 (h)

The minimum permissible attenuation level of any spurious emissions is  $43 + 10 \log (P)$  dB where transmitting power (P) in Watts.

#### TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

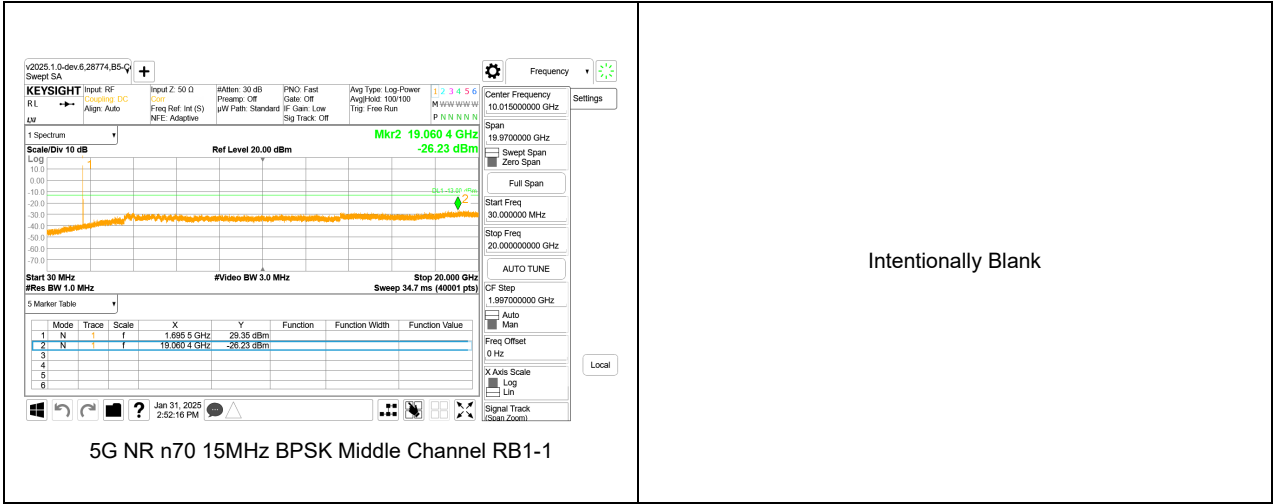
For each out of band emissions measurement:

- Set display line at -13 dBm, -25dBm and -40dBm according to the band Limit
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.  
(NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

#### RESULTS

BPSK with 1RB is the highest power and PSD to all bandwidth. 1RB has the same frequency and power to all bandwidth. Therefore, BPSK with 1RB and wider bandwidths results are reported as worst case for 5G NRs.

9.3.1. 5G NR n70



## 9.4. FREQUENCY STABILITY

### LIMITS

FCC: §27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### TEST PROCEDURE

Use base station simulator with Frequency Error measurement capability.

- Temp. = -30°C to +50°C
- Voltage = (85% - 115%)

Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.  
End Voltage, 2.85VDC.

#### **Frequency Stability vs Temperature:**

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

#### **Frequency Stability vs Voltage:**

The peak frequency error is recorded (worst-case).

### RESULTS

See the following pages.

### 9.4.1. 5G NR n70 (BPSK 15MHz BANDWIDTH)

|                   |       |            |            |
|-------------------|-------|------------|------------|
| Test Engineer ID: | 12482 | Test Date: | 2025-03-12 |
|-------------------|-------|------------|------------|

| Band            | 70                | Frequency Range              |                               | Frequency Error Reading (Hz) | Limit                     |                                        |
|-----------------|-------------------|------------------------------|-------------------------------|------------------------------|---------------------------|----------------------------------------|
| Condition       |                   | 1695                         | 1710                          |                              | Frequency Stability (ppm) | Within Authorized Frequency Block (Hz) |
|                 |                   | Freq Reading @ Low End (MHz) | Freq Reading @ High End (MHz) |                              |                           |                                        |
| Temperature     | Voltage           |                              |                               |                              |                           |                                        |
| Normal (20°C)   | Normal            | 1695.4350                    | 1708.8264                     |                              |                           |                                        |
| Extreme (50°C)  |                   | 1695.4350                    | 1708.8264                     | -5.0                         | -0.003                    | Yes                                    |
| Extreme (40°C)  |                   | 1695.4350                    | 1708.8264                     | -4.7                         | -0.003                    | Yes                                    |
| Extreme (30°C)  |                   | 1695.4350                    | 1708.8264                     | -5.4                         | -0.003                    | Yes                                    |
| Extreme (10°C)  |                   | 1695.4350                    | 1708.8264                     | -4.9                         | -0.003                    | Yes                                    |
| Extreme (0°C)   |                   | 1695.4350                    | 1708.8264                     | -6.7                         | -0.004                    | Yes                                    |
| Extreme (-10°C) |                   | 1695.4350                    | 1708.8264                     | -5.4                         | -0.003                    | Yes                                    |
| Extreme (-20°C) |                   | 1695.4350                    | 1708.8264                     | -5.8                         | -0.003                    | Yes                                    |
| Extreme (-30°C) |                   | 1695.4350                    | 1708.8264                     | -4.6                         | -0.003                    | Yes                                    |
|                 |                   |                              |                               |                              |                           |                                        |
| 20°C            | 15%               | 1695.4350                    | 1708.8264                     | -5.5                         | -0.003                    | Yes                                    |
|                 | -15%              | 1695.4350                    | 1708.8264                     | -5.3                         | -0.003                    | Yes                                    |
|                 | End Point Voltage | 1695.4350                    | 1708.8264                     | -5.8                         | -0.003                    | Yes                                    |

9.5. PEAK-TO-AVERAGE POWER RATIO

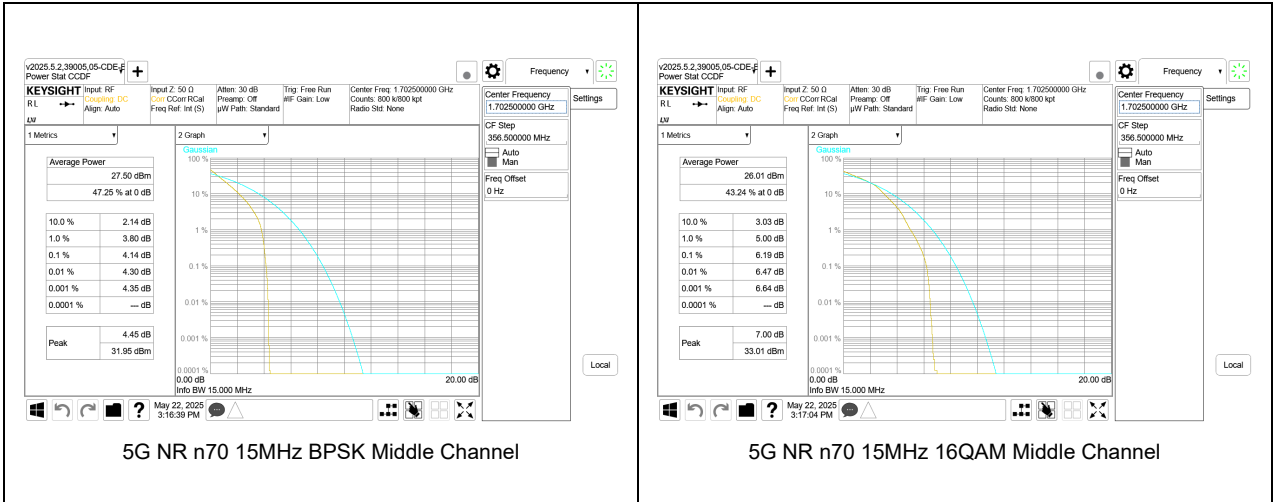
LIMIT

FCC: §27.50 (d) (5)  
In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

RESULT

Antenna 1 was used to measure as the worst case; full resource block (FRB) for each bandwidth was used to measure as the worst case. The results from all CCDF measurements are passed with 13dB peak-to-average power ratio criteria.

Example Plots: FULL RB



9.5.1. 5G NR n70

|                   |       |            |            |
|-------------------|-------|------------|------------|
| Test Engineer ID: | 39005 | Test Date: | 2025-05-22 |
|-------------------|-------|------------|------------|

| Band                                                                                       | Bandwidth (MHz) | Frequency (MHz) | RB Allocation | RB OffSet | Modulation | Conducted Power (dBm) |         | Peak-to-Average Power Ratio (dB) |
|--------------------------------------------------------------------------------------------|-----------------|-----------------|---------------|-----------|------------|-----------------------|---------|----------------------------------|
|                                                                                            |                 |                 |               |           |            | Peak                  | Average |                                  |
| 5G NR n70                                                                                  | 5MHz            | 1702.5          | 25            | 0         | BPSK       | 31.84                 | 27.52   | 4.32                             |
|                                                                                            |                 |                 |               |           | 16QAM      | 32.65                 | 25.96   | 6.69                             |
|                                                                                            | 10MHz           |                 | 50            | 0         | BPSK       | 31.83                 | 27.53   | 4.30                             |
|                                                                                            |                 |                 |               |           | 16QAM      | 32.63                 | 25.98   | 6.65                             |
|                                                                                            | 15MHz           |                 | 75            | 0         | BPSK       | 31.95                 | 27.50   | 4.45                             |
|                                                                                            |                 |                 |               |           | 16QAM      | 33.01                 | 26.01   | 7.00                             |
| Duty Cycle Correction Factor (dB) =                                                        |                 |                 | 0.00          |           |            |                       |         |                                  |
| Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor |                 |                 |               |           |            |                       |         |                                  |

## 10. RADIATED TEST RESULTS

### LIMITS

FCC: §27.53 (h)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

### Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, the radiated emissions is measured directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement.

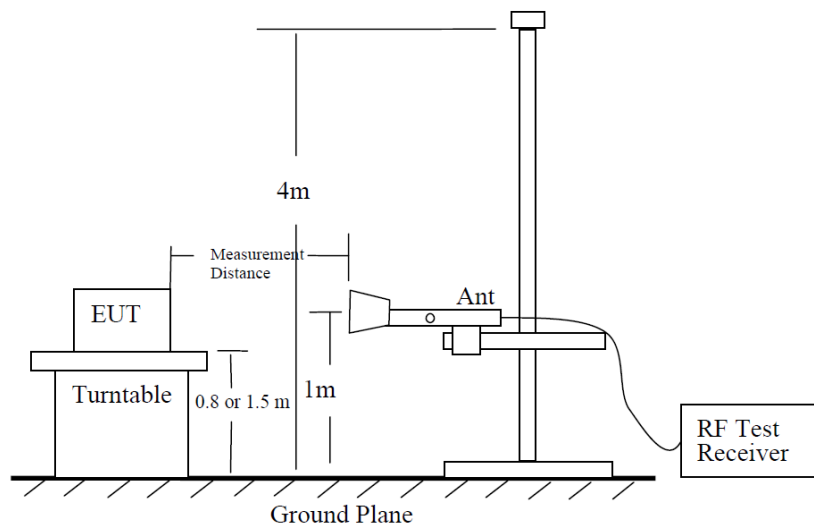


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

### Radiated Power Measurement Calculation According to ANSI C63.26-2015

- a)  $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$ .
- b)  $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$ .
- c)  $E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$ ; where D is the measurement distance (in the far field region) in m.
- d)  $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$ ; where D is the measurement distance (in the far field region) in m.

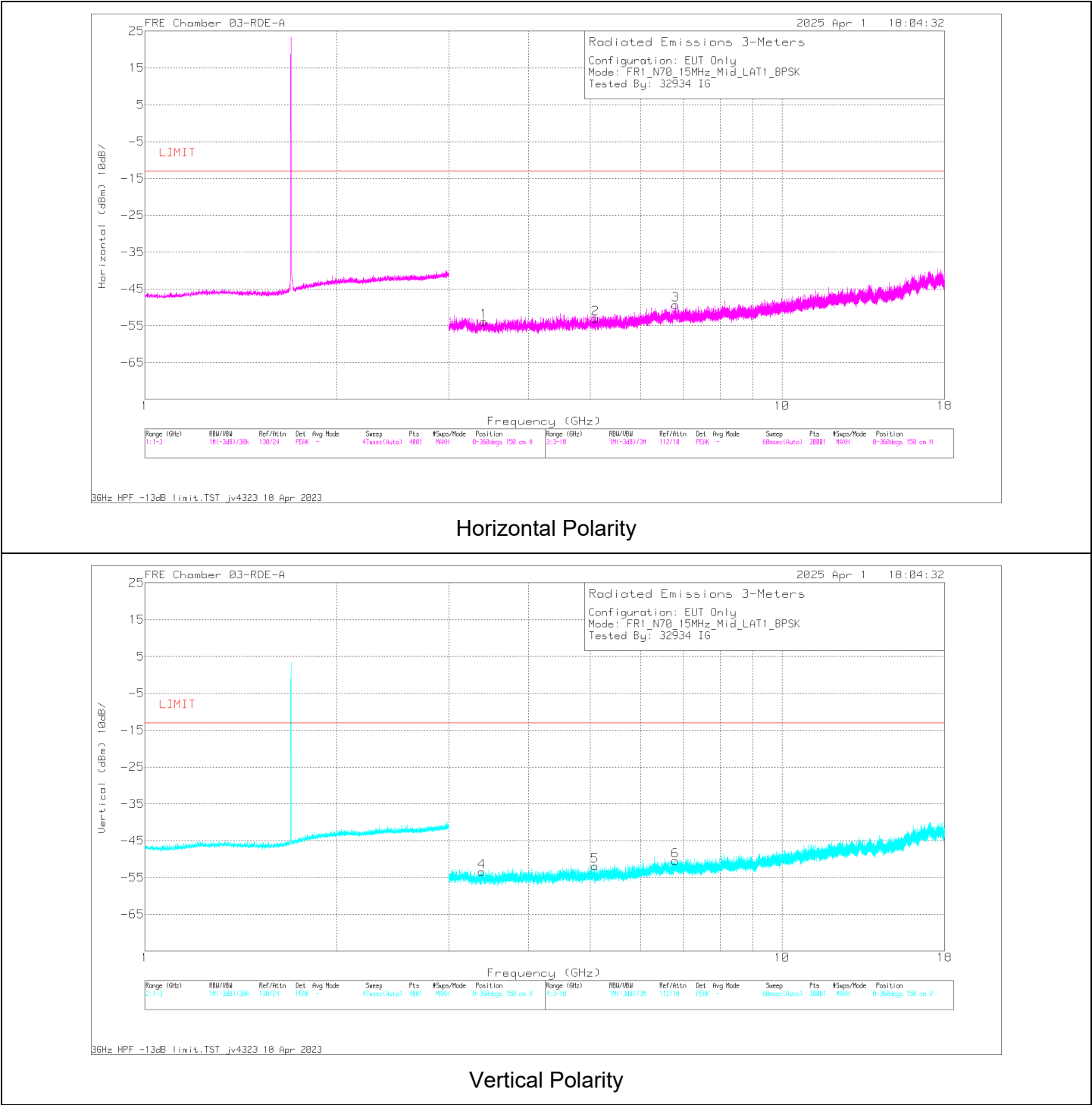
So, from d)

The measuring distance is usually at 3m, then  $20 \cdot \log(3) = 9.5424$

Then,  $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

Example Plot



**Trace Markers**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 226673 ACF (dB/m) | EIRP CF | Gain/Loss (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Polarity |
|--------|-----------------|----------------------|-----|-------------------|---------|----------------|-------------------------|-------|-------------|----------|
| 2      | 5.093000        | 55.98                | Pk  | 34.1              | -95.2   | -47.90         | -53.02                  | -13   | -40.02      | H        |
| 5      | 5.086500        | 57.19                | Pk  | 34.1              | -95.2   | -47.95         | -51.86                  | -13   | -38.86      | V        |
| 4      | 3.383000        | 55.97                | Pk  | 32.8              | -95.2   | -47.00         | -53.43                  | -13   | -40.43      | V        |
| 1      | 3.403500        | 55.58                | Pk  | 32.8              | -95.2   | -46.95         | -53.77                  | -13   | -40.77      | H        |
| 6      | 6.802000        | 53.82                | Pk  | 35.8              | -95.2   | -44.90         | -50.48                  | -13   | -37.48      | V        |
| 3      | 6.812500        | 55.09                | Pk  | 35.8              | -95.2   | -45.00         | -49.31                  | -13   | -36.31      | H        |

## **10.1. FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz**

### **TEST PROCEDURE**

KDB 971168 D01 /D02

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz

### **RESULTS**

## 10.1.1. 5G NR n70

### 5G NR n70 BPSK 15.0MHZ BANDWIDTH, ANT 1

|                |                      |
|----------------|----------------------|
| Project #:     | 15496277             |
| Date:          | 2025-04-01           |
| Test Engineer: | 32934                |
| Configuration: | EUT Only             |
| Mode           | 5G NR n70 BPSK 15MHz |
| Chamber #:     | 03-RDE-A             |

| Frequency (GHz)        | Meter Reading (dBuV) | Det | 226673 ACF (dBm) | EIRP CF | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT (dBm) | Margin (dB) | Polarity |
|------------------------|----------------------|-----|------------------|---------|--------------|-------------------------|-------------|-------------|----------|
| Mid Channel, 1702.5MHz |                      |     |                  |         |              |                         |             |             |          |
| 3.383000               | 55.97                | Pk  | 32.8             | -95.2   | -47.00       | -53.43                  | -13         | -40.43      | V        |
| 3.403500               | 55.58                | Pk  | 32.8             | -95.2   | -46.95       | -53.77                  | -13         | -40.77      | H        |
| 5.093000               | 55.98                | Pk  | 34.1             | -95.2   | -47.90       | -53.02                  | -13         | -40.02      | H        |
| 5.086500               | 57.19                | Pk  | 34.1             | -95.2   | -47.95       | -51.86                  | -13         | -38.86      | V        |
| 6.802000               | 53.82                | Pk  | 35.8             | -95.2   | -44.90       | -50.48                  | -13         | -37.48      | V        |
| 6.812500               | 55.09                | Pk  | 35.8             | -95.2   | -45.00       | -49.31                  | -13         | -36.31      | H        |

### 5G NR n70 (BPSK 15.0MHZ BANDWIDTH, ANT 2

|                |                      |
|----------------|----------------------|
| Project #:     | 15496277             |
| Date:          | 2025-04-10           |
| Test Engineer: | 45258                |
| Configuration: | EUT Only             |
| Mode           | 5G NR n70 BPSK 15MHz |
| Chamber #:     | 04-RDE-P             |

| Frequency (GHz)        | Meter Reading (dBuV) | Det | 200897 ACF (dBm) | EIRP CF | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT (dBm) | Margin (dB) | Polarity |
|------------------------|----------------------|-----|------------------|---------|--------------|-------------------------|-------------|-------------|----------|
| Mid Channel, 1702.5MHz |                      |     |                  |         |              |                         |             |             |          |
| 3.405500               | 54.04                | Pk  | 32.7             | -95.2   | -46.25       | -54.71                  | -13         | -41.71      | H        |
| 3.407000               | 55.01                | Pk  | 32.7             | -95.2   | -46.25       | -53.74                  | -13         | -40.74      | V        |
| 5.111000               | 56.63                | Pk  | 34.0             | -95.2   | -48.94       | -53.51                  | -13         | -40.51      | V        |
| 5.111500               | 56.97                | Pk  | 34.0             | -95.2   | -48.94       | -53.17                  | -13         | -40.17      | H        |
| 6.810500               | 53.15                | Pk  | 35.8             | -95.2   | -45.46       | -51.71                  | -13         | -38.71      | V        |
| 6.812000               | 54.36                | Pk  | 35.8             | -95.2   | -45.42       | -50.46                  | -13         | -37.46      | H        |

**5G NR n70 BPSK 15.0MHZ BANDWIDTH, ANT 3**

|                |                      |
|----------------|----------------------|
| Project #:     | 15496277             |
| Date:          | 2025-04-11           |
| Test Engineer: | 32933                |
| Configuration: | EUT Only             |
| Mode           | 5G NR n70 BPSK 15MHz |
| Chamber #:     | 04-RDE-P             |

| Frequency (GHz)               | Meter Reading (dBuV) | Det | 200897 ACF (dBm) | EIRP CF | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT (dBm) | Margin (dB) | Polarity |
|-------------------------------|----------------------|-----|------------------|---------|--------------|-------------------------|-------------|-------------|----------|
| <b>Mid Channel, 1702.5MHz</b> |                      |     |                  |         |              |                         |             |             |          |
| 3.407500                      | 55.37                | Pk  | 32.7             | -95.2   | -46.25       | -53.38                  | -13         | -40.38      | H        |
| 3.405000                      | 54.76                | Pk  | 32.7             | -95.2   | -46.24       | -53.98                  | -13         | -40.98      | V        |
| 5.104500                      | 57.05                | Pk  | 34.0             | -95.2   | -48.99       | -53.14                  | -13         | -40.14      | H        |
| 5.105000                      | 56.52                | Pk  | 34.0             | -95.2   | -48.98       | -53.66                  | -13         | -40.66      | V        |
| 8.514000                      | 52.38                | Pk  | 36.0             | -95.2   | -44.27       | -51.09                  | -13         | -38.09      | H        |
| 8.516500                      | 52.07                | Pk  | 36.0             | -95.2   | -44.21       | -51.34                  | -13         | -38.34      | V        |

**5G NR n70 BPSK 15.0MHZ BANDWIDTH, ANT 4**

|                |                      |
|----------------|----------------------|
| Project #:     | 15496277             |
| Date:          | 2025-04-11           |
| Test Engineer: | 32933                |
| Configuration: | EUT Only             |
| Mode           | 5G NR n70 BPSK 15MHz |
| Chamber #:     | 04-RDE-P             |

| Frequency (GHz)               | Meter Reading (dBuV) | Det | 200897 ACF (dBm) | EIRP CF | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT (dBm) | Margin (dB) | Polarity |
|-------------------------------|----------------------|-----|------------------|---------|--------------|-------------------------|-------------|-------------|----------|
| <b>Mid Channel, 1702.5MHz</b> |                      |     |                  |         |              |                         |             |             |          |
| 3.405500                      | 54.78                | Pk  | 32.7             | -95.2   | -46.25       | -53.97                  | -13         | -40.97      | H        |
| 3.404000                      | 56.61                | Pk  | 32.7             | -95.2   | -46.25       | -52.14                  | -13         | -39.14      | V        |
| 5.123000                      | 58.25                | Pk  | 34.0             | -95.2   | -48.90       | -51.85                  | -13         | -38.85      | H        |
| 5.086250                      | 57.62                | Pk  | 33.9             | -95.2   | -49.00       | -52.68                  | -13         | -39.68      | V        |
| 6.828500                      | 53.85                | Pk  | 35.8             | -95.2   | -45.08       | -50.63                  | -13         | -37.63      | H        |
| 6.805000                      | 54.60                | Pk  | 35.8             | -95.2   | -45.49       | -50.29                  | -13         | -37.29      | V        |

## **11. SETUP PHOTOS**

Refer to 15496277-EP1V1 for setup photos.

**END OF REPORT**